



Laser-assisted deposition of thin C60 films

Schou, Jørgen; Canulescu, Stela; Fæster, Søren

Publication date:
2011

Document Version
Early version, also known as pre-print

[Link back to DTU Orbit](#)

Citation (APA):
Schou, J., Canulescu, S., & Fæster, S. (2011). *Laser-assisted deposition of thin C60 films*. Abstract from 2011 Annual meeting of Danish Physical Society, Nyborg, Denmark.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Laser-assisted deposition of thin C₆₀ films

By		Jørgen		Schou		(1)
and						
Stela			Canulescu			(2)
Søren			Fæster			Nielsen(3)
(1,2)	DTU	Fotonik,	Risø	Campus,	DK-4000	Roskilde
(3)	AMF,	Risø	DTU,	DK-4000	Roskilde,	Denmark
Presentation				type:		talk

Contact: josc@fotonik.dtu.dk

Metal and metal oxide films with controlled thickness from a fraction of a monolayer up to more than 1000 nm and known stoichiometry can be produced by pulsed laser deposition (PLD) relatively easily, and (PLD) is now a standard technique in all major research laboratories within materials science. However, organic materials are usually not well suited for direct laser irradiation, since the organic molecules may suffer from fragmentation by the laser light. We have, therefore, explored the possible fragmentation of organic molecules by attempting to produce thin films of C₆₀ which is a strongly bound carbon molecule with a well-defined mass (M = 720 amu) and therefore a good, organic test molecule.

C₆₀ fullerene thin films of average thickness of more than 100 nm were produced in vacuum by matrix-assisted pulsed laser evaporation (MAPLE). A 355 nm Nd:YAG laser was directed onto a frozen target of the matrix material, anisole, with a concentration of 0.67 wt% C₆₀. At laser fluences below 1.5 J/cm², a dominant fraction of the film molecules are C₆₀ transferred to the substrate without any fragmentation. High-resolution SEM images of MAPLE deposited films reveal large circular features on the surface with high amount of material concentrated at edges.